Acta Cryst. (1980). A**36**, 834

Oxidation reactions in natural Fe–Ti oxide spinels: erratum. By R. FROST, *Department of Geology and Mineralogy, University of Oxford, Parks Road, Oxford OX*1 3*PH, England* and P. L. GAI, *Department of Metallurgy and Science of Materials, University of Oxford, Parks Road, Oxford OX*1 3*PH, England*

(*Received* 31 *July* 1980)

Abstract

The scale mark on Fig. 2(*a*) of Frost & Gai [*Acta Cryst.* (1980), A**36**, 678–682] was deleted by the printer. The magnification factor for this figure is ×38 300.

All information is given in the *Abstract*.

International Union of Crystallography

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Co-editors of *Acta Crystallographica*

Professor J. M. Cowley, Department of Physics, Arizona State University, USA, and Professor M. M. Woolfson, Department of Physics, University of York, England, have resigned as Co-editors of *Acta Crystallographica*. They have been succeeded by Professor R. Collela, Physics Department, Purdue University, USA, and Dr B. T. M. Willis, Materials Physics Division, AERE Harwell, England. Dr S. Jagner, Department of Inorganic Chemistry, Chalmers University of Technology and University of Göteborg, Sweden, has also been appointed as a Co-editor, whilst Dr M. Hospital, Laboratoire de Cristallographie et de Physique Cristalline du CNRS, Talence, France, was appointed a Co-editor earlier this year. The full addresses of all Co-editors of the journal are given on the inside front cover of each issue.

Book Reviews

*Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS*2 9*JT, England). As far as practicable books will be reviewed in a country different from that of publication.*

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Induced representation in crystals and molecules. Point, space and nonrigid molecule groups. By SIMON L. ATTMANN. Pp. xviii + 369. London: Academic Press, 1977. Price £18·80, US $35.25.

Group-theory applications are becoming increasingly more complex in theoretical chemistry and related fields. A valuable monograph on some of the more advanced topics is here available in the form of a detailed account of the construction of representations for the larger groups, particularly the space groups.

Altmann provides a basic introduction to the theory of finite groups in the initial chapters of the book. Great care is taken in order to have a consistent set of notations by using a rather extensive list of symbols in a variety of types. Cross references are frequent in a short-hand system.

The basic features of representation theory are covered as a preamble to the development of induced representations. Fundamental theorems by Mackey are proved within the realm of what is required for the present applications. Little groups, orbits and other concepts are clearly enunciated with examples and they are then used to determine the induced representations. Their properties with regard to irreducibility and completeness are proven and the tools are then ready for application.

The nature of the space groups has been greatly elucidated in papers by Altmann and coworkers and the essence of this development is presented in this text. The closely related subject of semidirect products, which is of importance also in point groups, is also given thorough exposure. Altmann's text closes with a balanced exposition of the development of a group-theoretical basis for the so-called 'non rigid molecules'.

As a reviewer I am in the position that I have found no error to prove that I have worked through all the formulas, but as a reader I am pleased to have found a well written and nicely produced book. Some of the notations which are chosen seem to me to be a bit contrived, however, and the list

of symbols needs frequent consultation which sometimes tends to disrupt the flow of the argument.

Altmann's monograph will be a very useful text for theoretical chemists and solid-state physicists. The examples and the detailed application of the general theory distinguishes the account from the purely formal and less motivating presentations.

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Acta Cryst. (1980). A**36**, 835

Dislocations in crystals. Edited by F. R. N. NABARRO. Pp. 562. Amsterdam: North Holland, 1979. Price US $97.50, Dfl 200.00.

This book is the second volume of the five-volume series *Dislocations in Solids*, edited by F. R. N. Nabarro. This volume will undoubtedly be useful for readers who are interested in the problems of taking into account the actual atomic structure of crystals with dislocations.

In the first chapter (*Lattice theories of dislocations* by R. Bullough and V. K. Tewary), a general view is given of the influence of various aspects of the periodicity of the crystal lattice on the properties of dislocations. Considering the atomic models of dislocations, the authors discuss the Peierls–Nabarro and van der Merwe models and apply these to the description of the properties of individual dislocations and the tilt boundary. The Maradudin model is also considered in detail; the calculations of displacement field and strain energy are given for the case of a static lattice and for a lattice with vibrating atoms. The examples of a stationary dislocation and a vibrating one which can absorb or emit phonons are considered. In the latter case the authors omitted the possibility of using the work of V. I. Alshits. A very brief review of the various interatomic potential models is given. These potentials have been used for the energy and simulation calculations of the atomic configurations of dislocation cores. The simulation method for the study of the atomic configurations of dislocation cores is discussed for copper and iron as specific examples of the face-centred and body-centred lattices.

The next chapter (*Dislocations in particular structures* by S. Amelinckx) is a really encyclopaedic review which gives a comprehensive representation of dislocations in many important structures. The formation of various linear and planar defects and their configurations is shown schematically, together with electron micrographs of the corresponding defects. The stacking faults and dislocations in close-packed and body-centred cubic structures are considered in detail: perfect dislocations, Shockley and Frank partials, Lomer–Cottrell locks, stacking-fault tetrahedra, interaction of the intersecting ribbons, geometry of cross-slip, formation of prismatic loops, *etc.* Some of these defects are described in covalent structures (diamond, wurtzite, sphalerite, tellurium, *etc.*) and layer structures [CdI_2, SnS_2, NiB_2, graphite, $Bi_2O_2(C)$, *etc.*] and also in ionic crystals (NaCl, MgO). The calculations of the equilibrium configurations of different ribbons in an isotropic and an anisotropic medium are given; the possible forms of nodes are described. One part of this review is devoted to antiphase boundaries and superdislocations in ordered alloys based on the f.c.c., h.c.p. and b.c.c. structures. The calculations of the energy of the antiphase boundaries and glide superdislocations in these structures are considered. Dislocation networks and geometrical aspects of sub-boundaries consisting of well resolved dislocation lines are discussed.

The last chapter (*Misfit dislocations* by J. W. Matthews) is devoted to the theoretical and experimental consideration of the structure of the interface between two crystals. The consideration is mainly restricted to the cases of crystals having the same structure and orientation but differing slightly in lattice spacing. The model of the Frank and van der Merwe boundary is briefly described, the geometrical peculiarities of this boundary are considered for epitaxial thin films with misfit dislocations, isomorphic precipitates in ageing alloys, *etc.* The bubble models of interface-boundary structure and the results of electron-microscope investigations of coherent and partly coherent boundaries are given for various materials. The possible mechanisms for the generation of misfit dislocations and the factors which assist or impede their generation are discussed. The effect of misfit dislocations on the diffusion process is considered. One could also have included in such a review the consideration of the cases of misfit dislocation generation when two crystals have different structures and (or) different orientations and, in addition, the latest electron-microscope achievements of the discovery of misfit dislocations by the direct observation of crystal structure.

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Acta Cryst. (1980). A**36**, 835–836

Nobel symposium 47 – Direct imaging of atoms in crystals and molecules. Edited by LARS KIHLBORG. Pp. 295. Royal Swedish Academy of Sciences, 1979. Price 300 Sw. Kronor.

Although a technique for resolving single atoms on the surfaces of certain metals, *viz* field ion microscopy, has been available for more than thirty years, it is not applicable to the study of most systems where resolution at the atomic level is sought. Thus the more indirect diffraction methods of the crystallographer have continued to play a major role where they can be used. There is, however, no doubt that many fields of science would benefit greatly if a direct method of structure observation at the atomic level were to become available and hence there has been growing interest over the last few years in the developments which have taken place in electron microscopy. These have included not only improve-